

***Peanut Stunt Virus* Infecting Perennial Peanuts in Florida and Georgia¹**

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INTRODUCTION: *Peanut stunt virus* (PSV) has been reported to cause disease in a number of economically important plants worldwide. In the southeastern United States, PSV is widespread in forage legumes and is considered a major constraint to productivity and stand longevity (McLaughlin *et al.* 1992). It is one of the principal viruses associated with clover decline in the southeast (McLaughlin and Boykin 1988). In 2002, this virus (Fig. 1) was reported in the forage legume rhizoma or perennial peanut, *Arachis glabrata* Benth. (Blount *et al.* 2002).



Fig. 1. A field of 'Florigraze' showing the yellowing symptoms of Peanut Stunt Virus. Yellow patches are infected with the virus. (Photography credit: Dr. Robert Morgan, Forage Specialist, Tifton, GA)

Perennial peanut was brought into Florida from Brazil in 1936. In general, the perennial peanut is well adapted to the light sandy soils of the southern Gulf Coast region of the U.S. It is drought-tolerant, grows well on low-fertility soils and is relatively free from disease or insect pest problems. The relatively impressive forage yields of some accessions makes the perennial peanut a promising warm-season perennial forage legume for the southern Gulf Coast. Due to its high-quality forage, locally grown perennial peanut hay increasingly competes for the million plus dollar hay market currently satisfied by imported alfalfa (*Medicago sativa* L.). There are approximately 25,000 acres of perennial peanut in Alabama, Georgia and Florida combined. About 1000 acres are planted as living mulch in citrus groves. Popular forage cultivars include 'Arbrook' and 'Florigraze'. An ornamental type, 'Ecoturf', is also commercially available.

PATHOGEN: PSV is a member of the Bromoviridae family of viruses and is in the same genus as cucumber mosaic virus (Cucumovirus). The virus is seed-transmitted in peanuts (*A. hypogaea* L.) and is vectored non-persistently by several aphid species (Brunt *et al.* 1966).

SYMPTOMS: Diseased perennial peanuts can exhibit symptoms that included stunted plants, chlorosis (Fig. 2A), mottling (Fig. 2B), malformed leaves and reduced foliage yield. Plants can also be infected with the virus and show no obvious symptoms.

DISTRIBUTION: PSV was first observed in Virginia as a new disease of cultivated peanuts in 1964 (Miller and Troutman 1966). Since then the virus has been found throughout the southeastern US, including Florida (Batchelor *et al.* 1974). Strains of the virus have also been found in Washington (Mink *et al.* 1967), Illinois (Mobrath and Tolin 1977) and several other countries including Spain, the Sudan, Iran, Morocco, Japan and China.

Diseased perennial peanuts were originally found in Jackson and Gulf counties in Florida and in Lowndes County, Georgia. They have since been found in Alachua and Collier counties, Florida and in Puerto Rico. Infected plants have been found in 17 of 19 accessions of perennial peanuts tested including 'Ecoturf', 'Florigraze', 'Arblick', and 'Arbrook'.

HOSTS: PSV is known to infect white clover (*Trifolium repens* L.). This plant is believed to be a principal reservoir host for this virus in the Southeast (Hebert 1967; Choopanya 1968). In one study, 80% of the white clover sampled was infected with PSV (McLaughlin *et al.* 1992). Besides white clover and peanuts, the virus is known to cause disease in tobacco (*Nicotiana* spp.), soybean (*Glycine max* L. Merr.) (Milbrath and Tolin 1977), and snapbeans (*Phaseolus vulgaris* L.) (Echandi and Hebert 1970). Its host range also includes cucurbits (*Cucumis sativus* L. and *Cucurbita pepo* L.), peppers (*Capsicum annuum* L.) and

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Fig. 2. (A) Chlorotic symptoms, and (B) typical mottling symptoms on Florigraze. (Photography credit: Dr. Robert Morgan, Forage Specialist, Tifton, GA)

tomatoes (*Lycopersicon esculentum* Mill.), although the isolate from perennial peanut used for host range studies does not go to these plants to date.

CONTROL: There is no known control.

SURVEY AND DETECTION: Because not all perennial peanut varieties show symptoms like those seen in 'Florigraze' (Fig. 2), diagnosis must be done using a laboratory test such as ELISA. In addition, the virus cannot always be detected in the leaves, so rhizomes must be used to detect the virus.

Although the virus has a wide host range and can cause disease in economically important plants, it has never been considered a major problem in the southeastern US except for forage legumes such as clover. However, it is not known what role perennial peanut may play as a reservoir of the virus for other susceptible crops. In addition, little is known about the potential for production loss and stand longevity in perennial peanuts grown for forage.

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